

# Technical Bulletin

## Rotator Drive Pinion Seal Service

This sheet describes pinion seal replacement procedures for rotator drives on Cascade paper roll clamps and rotating attachments.

Different pinion bearing and seal arrangements are used. Use this technical bulletin to identify which type you have.

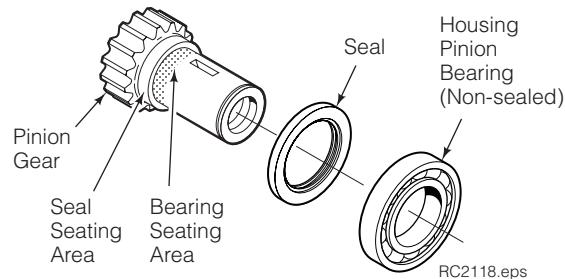
**IMPORTANT:** The complete Rotator Drive Group should be serviced whenever component parts are replaced. See Service Manual procedures included for reference.

### Identifying drive box pinion bearing and seal arrangement:

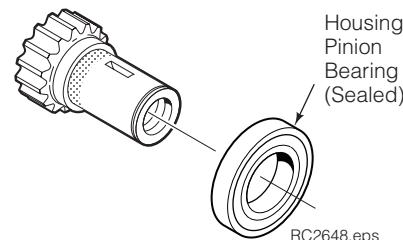
- 1 Current design uses an external pinion seal with unsealed roller bearing. If you have this type **remove the seals from the sealed bearing supplied in the service kit.** Install external seal and bearing as described in the service procedures on the following pages.
  
- 2 Earlier design uses a sealed roller bearing with no external seal. If you have this type **discard the seal supplied in the service kit.** Install bearing as described in the service procedures on the following pages.

**1**

PINION BEARING WITH EXTERNAL SEAL  
(current design)

**2**

SEALED PINION BEARING WITHOUT EXTERNAL SEAL (earlier design)



**NOTE:** This information should not be interpreted as the basis for warranty claims unless so designated.

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Write: Cascade Corporation, PO Box 20187, Portland, OR 97294-0187

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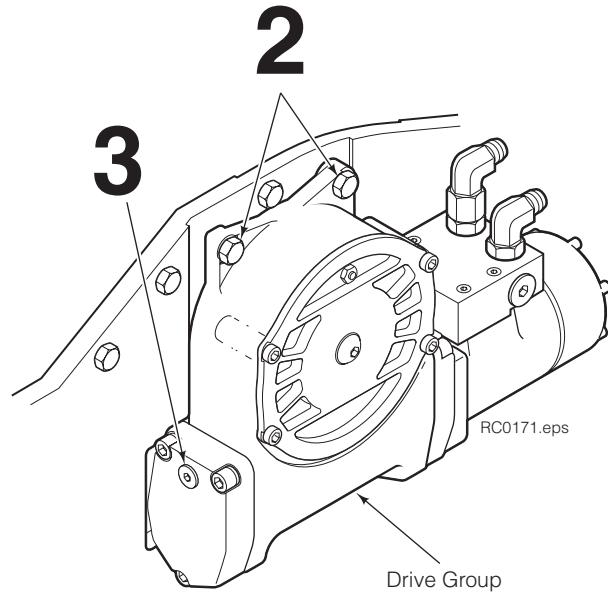
OR

Write: Cascade Corporation, 2501 Sheridan Ave., Springfield, OH 45505

## 5.3 Drive Group

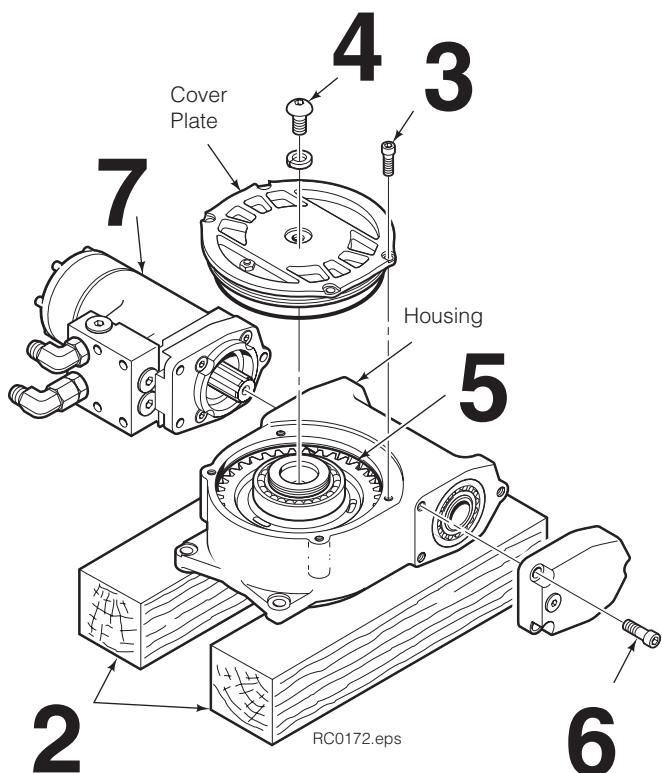
### 5.3-1 Drive Group Removal and Installation

- 1 Remove the Clamp from the truck as described in Section 5.1.
- 2 Remove the four capscrews fastening the drive group to the baseplate. For reassembly, tighten the capscrews to 65–75 ft.-lbs. (90–100 Nm).
- 3 For reassembly, reverse the above procedures with the following exceptions:
  - After the drive group has been reinstalled, check the gearcase lubricant level. Lubricant must be up to the bottom of the fill plug hole. If necessary, fill with Cascade Gear Lube Part No. 656300, or SAE 90 wt. gear lube (AGMA 'mild' 6 EP Gear Lube).



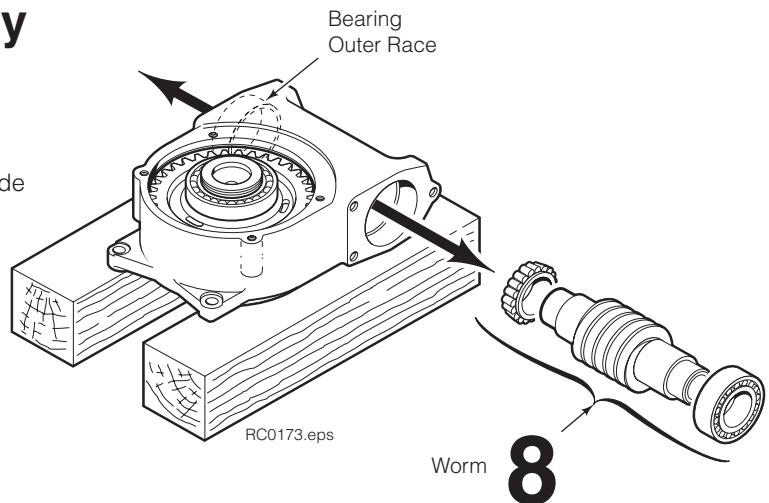
### 5.3-2 Drive Group Disassembly and Service

- 1 Remove the drive group from the baseplate as described in Section 5.3-1.
- 2 Lay the drive group, pinion down, on two 4 x 4-in. (10 x 10 cm) wood blocks placed on both sides of the pinion.
- 3 Remove the four capscrews fastening the cover plate to the housing.
- 4 Remove the center capscrew plug from the cover plate and install a (early) 3/8-in. NC or (later) M10 capscrew with a minimum thread length of 2 in. (50 mm). Remove the cover plate by turning the capscrew clockwise while lightly tapping around the sides of the cover plate.
- 5 Drain the lubricant from the housing.
- 6 Remove the three capscrews fastening the end cover to the housing.
- 7 Remove the drive motor as described in Section 5.4-1.

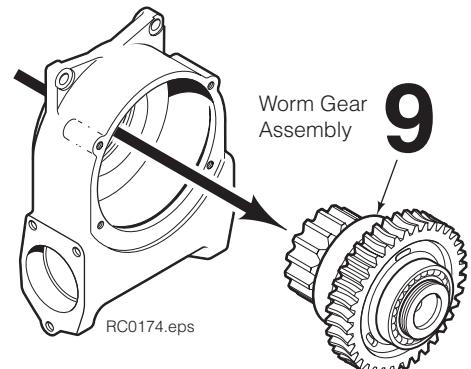


## 5.3-2 Drive Group Disassembly and Service (Continued)

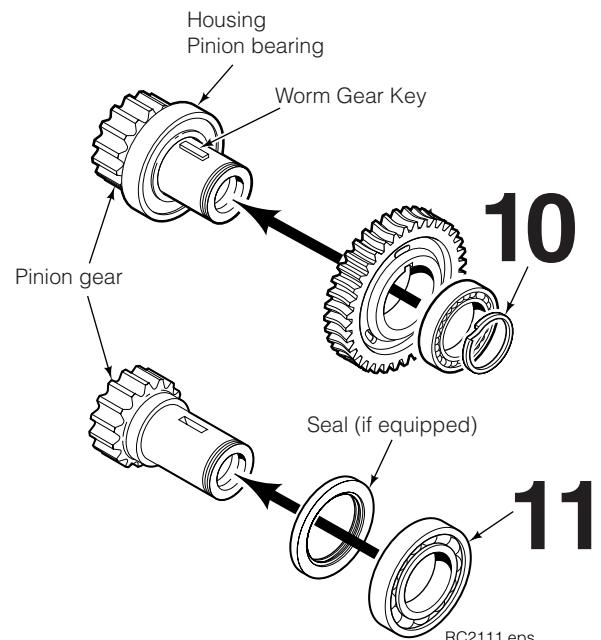
**8** Tap the worm and bearing assembly out through the end-cover side of the housing. Remove the opposite outer bearing race through the motor side of the housing.



**9** Press the pinion gear, seal, pinion bearings and worm gear out of the housing as an assembly.



**10** Remove the snap ring from the pinion gear shaft. Press the pinion gear from the worm ring gear and cover plate pinion bearing. Remove the pinion shaft key.



**IMPORTANT:** Heavy Duty Pinion uses two bearings with the first bearing retained by an additional snap ring (see illustration next page).

**11** Press the pinion gear out of the housing pinion bearing. Remove seal.

**12** Clean and inspect all components. Remove all dried sealant or threadlocker residue. Replace all worn items. Remove any burrs or sharp edges with emery cloth.

**NOTE:** Two types of large pinion bearing used: sealed bearing, and bearing with separate seal (shown)

## 5.3-3 Drive Group Reassembly

Build up the pinion/worm gear assembly vertically with the pinion gear down.

**1 Standard Pinion** – Position the seal against the pinion gear, spring-side facing housing. Apply Loctite 271 (red) to clean and dry bearing seating area on shaft as shown. Press a non-sealed housing bearing onto the pinion shaft. **IMPORTANT:** Earlier design uses a sealed bearing. Pry out bearing seals when using an external seal. Remove excess Loctite.

**Heavy Duty Pinion** – No external seal is used. Position the first bearing and snap ring on the pinion shaft. Apply Loctite 271 (red) to the second bearing seating area as shown. Press the second bearing onto the pinion shaft. Remove excess Loctite.

**CAUTION:** Assure Loctite does not squeeze into the seal or bearings.

**2** Install the key, worm gear, cover plate pinion bearing and snap ring on the pinion.

**3** Apply Loctite 271 (red) to clean and dry housing seating area and shoulder for the housing pinion bearing and seal. Install the complete pinion assembly into the housing. Remove excess Loctite.

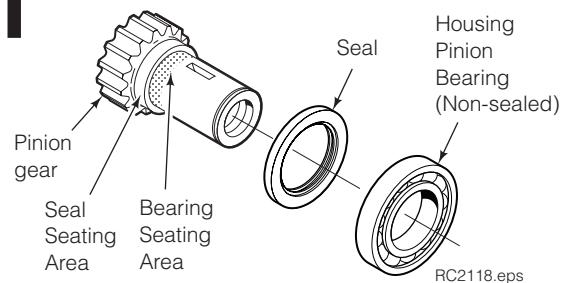
**CAUTION:** Assure Loctite does not squeeze into the seal or bearings.

**4** Install the worm's outer bearing race in the drive motor side of the housing. Make sure the race taper is inward as shown.

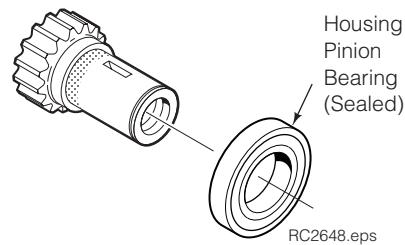
**5** Install the drive motor as described in Section 5.4-1.

**6** Install the worm and bearings in the housing. Fully engage the worm with the drive motor shaft. Install the remaining outer bearing race. Make sure the race taper is inward as shown.

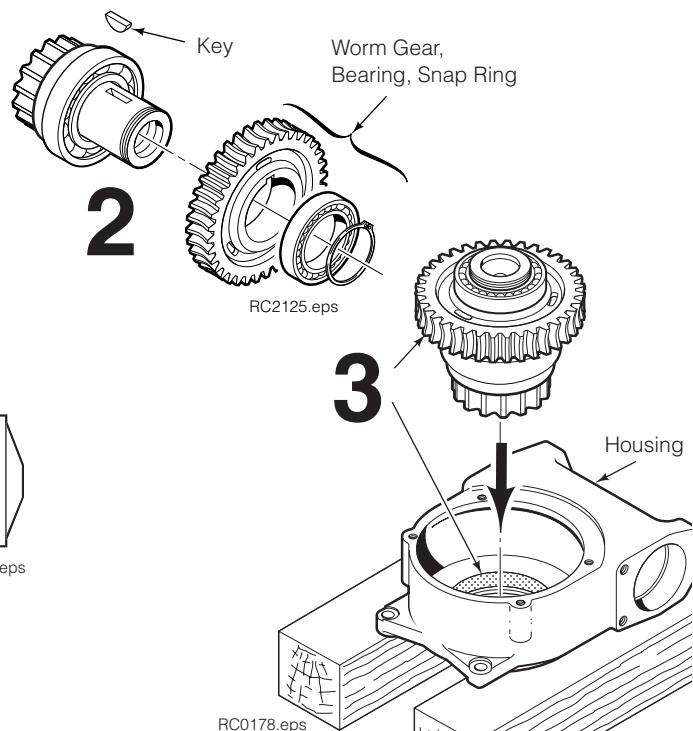
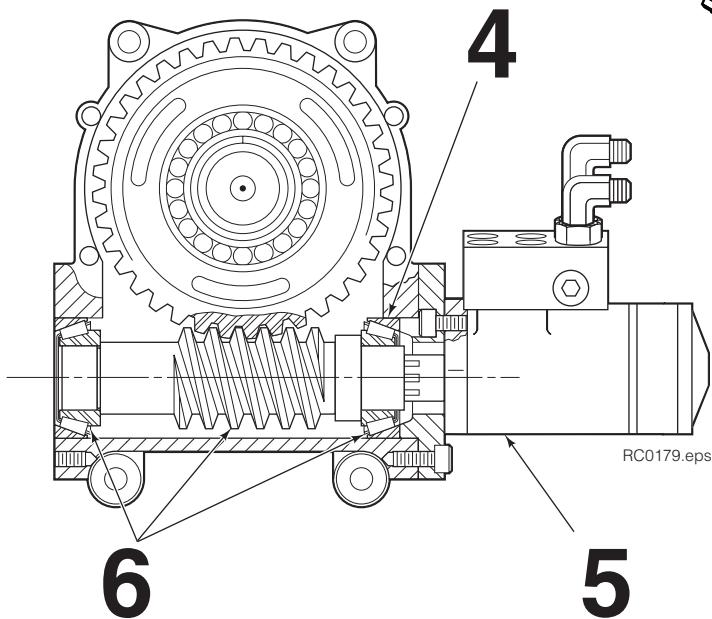
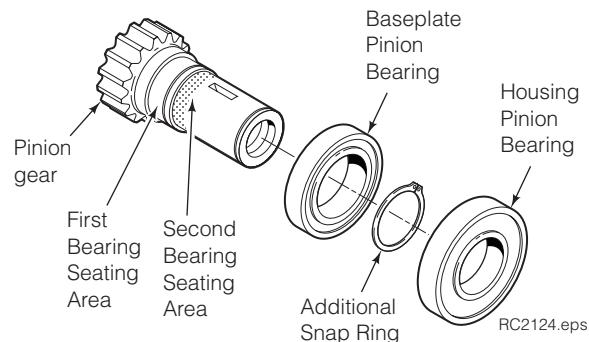
### 1 PINION AND BEARING WITH EXTERNAL SEAL



### PINION WITH SEALED BEARINGS



### HEAVY DUTY PINION WITH SEALED BEARINGS



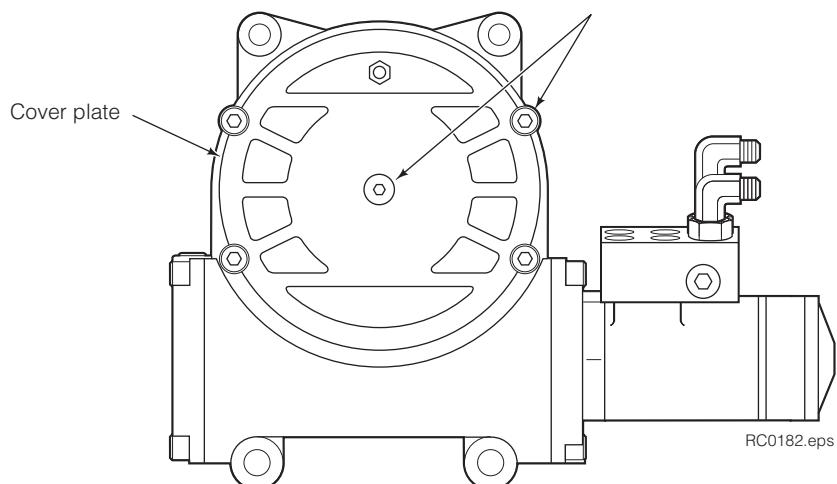
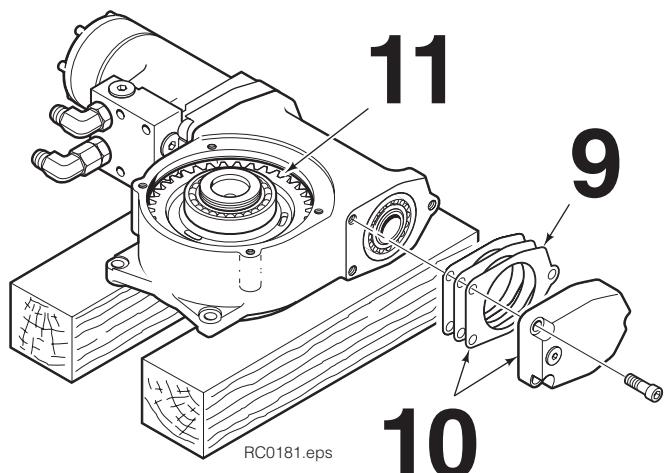
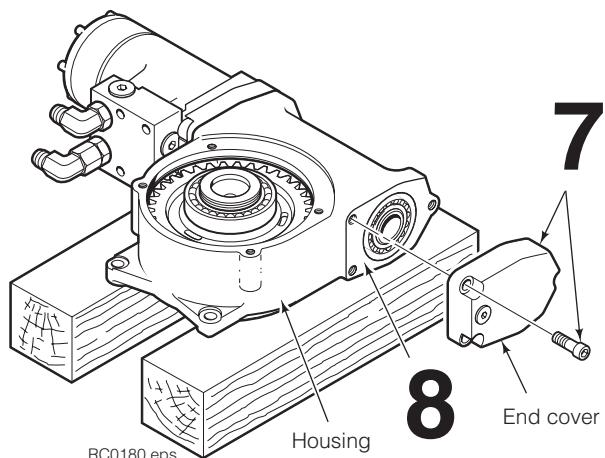
## 5.3-3 Drive Group Reassembly (Continued)

- 7 Temporarily install the end cover without shims. Tighten the capscrews sequentially in 10 ft.-lb. (15 Nm) increments to 20 ft.-lbs. (30 Nm).
- 8 Measure the gap between the end cover and housing in three places with a feeler gauge or 'Pastigage' thread and determine the minimum gap.
- 9 Choose a combination of end cover shims equal to the minimum gap measured plus the next higher .005 in. (0.12 mm) increment. See examples below:
  - (For .025-.029 in. measured gap, use .030 in. total shim thickness.)
  - (For .010-.014 in. measured gap, use .015 in. total shim thickness.)
  - (For .009 or less, use one(1) .010 in. shim, since a minimum of one .010 in. shim is required for a proper seal.)

**NOTE:** Shim Service kit 670578 contains the shims listed. A minimum of one(1) .010 shim is required to seal against leakage:

Qty	Part No.	Color	Thickness
2	671758	Clear/Yellow	.020 in. (.50 mm)
2	671757	Pink	.015 in. (.39 mm)
1	670574	Brown	.010 in. (.25 mm)

- 10 Remove the end cover. Apply Loctite 515 sealant (Cascade Part No. 668184) to both surfaces of the shims and the capscrews. Install the shim pack and end cover. Tighten the capscrews to a torque of 65 ft.-lbs. (90 Nm). Remove excess sealant.
- 11 With the gearcase laying flat, fill with 56 fluid ounces (540 ml) of Cascade Gear Lube Part No. 656300, or SAE 90 wt. gear lube (AGMA 'mild' 6EP Gear Lube).
- 12 Install the cover plate and gasket. Install the four cover plate capscrews and tighten to 15 ft.-lbs. (20 Nm). Install the center hole plug.
- 13 Reinstall the drive group on the rotator baseplate as described in Section 5.3-1.



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